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10/526,953	11/30/2005	Herbert Egli	MBZ-0502	8007

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EXAMINER	
WEISS, PAMELA HL	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,953	EGLI ET AL.	
	Examiner	Art Unit	
	PAMELA WEISS	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 21-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 21-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendments filed 1/5/09 overcome the rejections set forth in the office action mailed 10/3/08. New grounds of rejection necessitated by the amendments are set forth below.

Claim Rejections - 35 USC § 103

2. Claims 1-4 and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ellenberger (WO 99/18330) in view of Watson (US 3,600,899)

Regarding Claim 1

Ellenberger discloses a method of boring by means of a tunnel boring machine (P1 L29-33) which performs well when the strata through which a tunnel is being bored is relatively hard. (P1 L12-14) by adding at the cutting head a foamed aqueous liquid composition (P2 L6-13 and L26) which comprises a foaming agent (P2 L12 sulphate anionic surfactant), and a lubricant, the lubricant being high molecular weight polyethylene oxides. (P2 L9-10)

Ellenberger does not expressly disclose the shield tunnel boring machine as hardened steel with discs that protrude from the cutting edge. However, it would appear that this is the typical formation of tunnel boring machines.

Watson discloses a shield type tunneling apparatus comprises hardened steel disc cutters which are mounted on a patter on the front (i.e. protrude) (C2 L8-12 and

Figure 1, 22) and may be used on hard rock. (C3 L25-30). Watson discloses that the shield tunnel boring machine may be used in tunneling. (C4 L73-75)

It would have been obvious to a person having ordinary skill in the art at the time of invention to use the hardened steel disc cutter mounted (i.e. protruding) from the patter on the front as the tunnel boring machine of Ellenberger as it is suitable for hard strata tunneling.

Regarding Claim 2

Ellenberger discloses the limitations set forth above. Ellenberger also discloses the method in which the individual ingredients of the foaming composition are dispensed in individual aqueous form (P3 L7-14 and L20) into water and are converted to foam (P3 L20-22).

Regarding Claim 3:

Ellenberger discloses the limitations set forth above. Ellenberger discloses the method wherein the foaming agent is at least one of anionic or nonionic surfactants. (P2 L12 anionic surfactant).

Regarding Claim 4:

Ellenberger discloses the limitations set forth above. Ellenberger also discloses the method in which the composition is applied as a concentrate which is diluted with water in situ. (P3 L20-21) to provide the foaming composition.

Regarding Claim 22:

Ellenberger discloses the limitations set forth above. Ellenberger also discloses the polyethylene oxide has a weight average of at least 1,000,000 (P2 L9-10)

3. Claims 21 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellenberger (WO 99/18330) in view of Watson (US 3,600,899) as applied to claims 1-3 above, and further in view of Scherubel (US 4,796,702)

Regarding Claims 21 and 26 and 27:

Ellenberger discloses the limitations set forth above. Ellenberger does provide a "foam improver" which is typically an amine with long fatty acid chains derived from natural fats an oils. (P3 L1-5). While Ellenberger does not expressly state the fatty acid amine is an alkanolamine, it clearly contemplates the addition of this type of active composition.

Ellenberger does not expressly disclose a nonionic surfactant being at least one of an alkanolamine, aminoxide, ethoxylated alcohol, ethoxylated alkylphenol, ethoxylated ester, glucose ester, sucrose ester or derivatives thereof.

Scherubel (US 4,796,702) discloses a surfactant mixture with a nonionic surfactant and a cationic surfactant which forms a foamable liquid up addition to aqueous media for use in cleaning of bores, production wells and a variety of other applications. (C2 L38-52) and (Abstract). Scherubel discloses the use of nonionic surfactants such as fatty acid alkanomine reaction products, diglycerol esters of fatty acids, glycols, condensates of alkylene oxides with alcohols (i.e. phenols, etc.) (C3 L65-68 and C4 L17-23) Scherubel discloses the foamable composition is stable at reduced loading rates (C5 L15-17).

It would have been obvious to a person having ordinary skill in the art at the time of invention to use the fatty acid alkanolamine reaction product (i.e. alkanolamine) of the

condensate of alkylene oxide with phenols (i.e. ethoxylated alkylphenol) of Scherubel as a nonionic surfactant to improve stability of the composition of Ellenberger.

Regarding Claim 23:

Ellenberger discloses the limitations set forth above. Ellenberger does not expressly disclose the method in which the concentrate is added in an amount of about 0.5 to about 10kg/m^3 of rock removed.

As the thickness of the layer of the foam as well as the friction resistance and durability of the drill head are variables that can be modified by adjusting the amount of foaming concentrate injected at the site of drilling; therefore, the precise amount of foaming concentrate would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. Applicant expressly states in the Specification at Page 6 Lines 9-15 that the essential requirement is maintain a layer of foam in contact with the rock face and that achieving thie requirement is a matter of routine experimentation and the skilled person will easily be able to do it. As such, without showing unexpected results, the claimed amount of concentrate added of about 0.5 to about 10 kg/m^3 cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the claimed to obtain the desired thickness of the foam layer and friction resistance for durability of the drill head.

Regarding Claim 24:

Ellenberger discloses the limitations set forth above. Ellenberger also discloses the method in which the wear reducing foamable liquid concentrate also contains at least one of a sequestering agent or foam booster (P2 L6-12 and L26-31) in which the amounts of the components of the wear reducing foamable liquid concentrate are present in the following amounts:

1.2% polyethylene oxide (P4 L8 thus falling within the claimed range of 0.1 to 3%)

8.58% of the foaming agent (P4 L6 thus falling within the claimed range of 2 -40%)

5% foam booster (P4 L7 thus falling within the claimed range of greater than 0 to 10%)

Ellenberger discloses the use of Cublen K2523 (trademark) as a complexing agent. (P7 L20-21) (note: Cublen K2523 is also sequestering agent identified in applicant's specification) Ellenberger discloses the complexing agent may be used in an amount of 0.02 pbw (P4 L10) thus meeting the claim limitation of greater than 0 to 5% of sequestering agent.

Regarding Claim 25

Modified Ellenberger discloses the limitations set forth above. Ellenberger also discloses the method in which the wear reducing foamable liquid concentrate is diluted in 3% solution (P5 L4 thus falling within the claimed range of 1 to about 20 volumes of water) and foamed to provide a volume expansion of 1:10 with air (P5 L5 thus meeting the claim limitation of volume expansion from about 5 to about 40 times the volume of the un-foamed material).

Response to Argument

4. Applicant's arguments with respect to amended claims 1-4, and 21-27 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed 01/05/2009 have been fully considered but they are not persuasive. In response to applicant's argument that a person of ordinary skill in the art would not be motivated to use a boring foam to prevent wear on a steel drill bit that is used to drill hard rock because the foam is also effective when used for boring soft materials as in Ellenberger is not persuasive. While Ellenberger suggests that the foam is suitable for removal of soil, it also indicates that the foam may be used on shield tunnel boring machines which are used in a variety of strata with a rotatable cutting head which performs well in hard and firm strata (P1 L5-15).

In response to applicant's argument that there is no motivation to optimize the amount of compound used to the amount of hard rock to be bored: applicant does not identify in response to applicant's argument any reason or critical factor which would prevent one of ordinary skill in the art from determining the correct amount of composition to use to minimize friction and expense. (See Specification wherein applicant states that one of ordinary skill in the art would be able to determine the amount of concentrate to rock removed P6 L5-15)

6. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

PW

/Glenn A Caldarola/

Acting SPE of Art Unit 1797